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New challenges for the Italian system

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UTILITALIA

imprese acqua ambiente energia

www.utilitalia.it

About us

UTILITALIA

Association representing 471 companies of environment, water and energy business

National labour contracts handling for…

Gas and Water
36.000
workers

Environmental services
43.000
workers

Power
11.500
workers

Services offered by the associated companies and relative community share

Power distribution/retail
15%

Water
80%

Environmental
55%

Gas distribution/retail
30%

Our vision

- UTILITALIA is committed to offer a contribution to reach all the sustainability targets on a EU level.

- We believe that a reliable medium-long term strategy to achieve environmental sustainable targets should adequately consider the benefit from technological evolution, enforcing sustainable growth and multi-sectorlal approach towards energy sources.

- UTILITALIA and associated members promote efficient investments and consider the technological evolution as a key factor of the energy transition.

- The concept of sustainability is strongly linked to an efficient management of energy and environmental resources, improving local supply chains and multi-sectorial synergies, supporting growth, employment and welfare.

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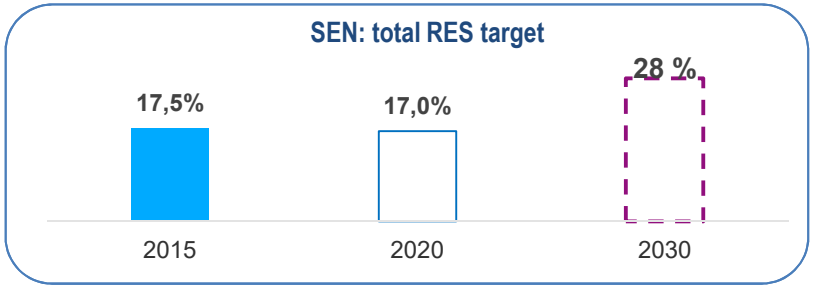
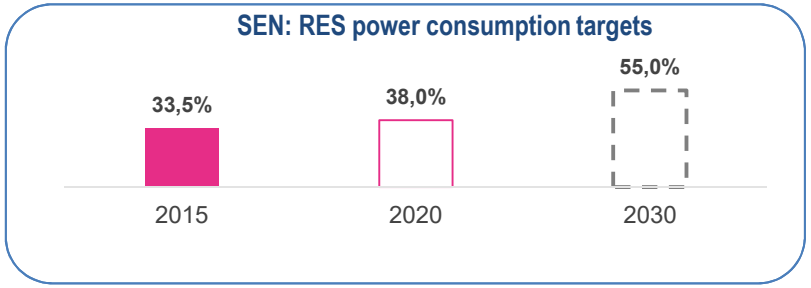
EU Targets 2021 – 2030: a strong commitment for Italy
From SEN 2017 to Clean Energy Package

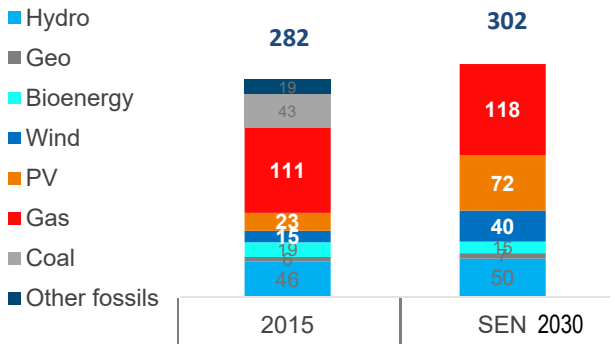
The Clean Energy Package is aimed to promote RES, energy efficiency, EU market and governance development. Regarding RES, the aim is to reach a collective target of 32% of final consumptions in 2030.

In Italy, ambitious targets were early considered by the SEN 2017





SEN 2017 also considered a scenario 2030 for RES generation (TWh)



According to SEN scenario, by 2030 PV will become the most important RES in Italy, triplicating its production by 2030. **In order to reach this target, PV capacity should increase of around +35 GW (triplicate) by 2030** (the exact value will depend on efficiency trends/targets)

According to SEN scenario 2030, wind production will have to triplicate. In order to reach this target**, WIND capacity should increase around + 10 GW (duplicate) by 2030** (the exact value will depend on efficiency trends/targets)

Energy & Climate Action Plan 2021-2030 will better clarify the rate of these goals

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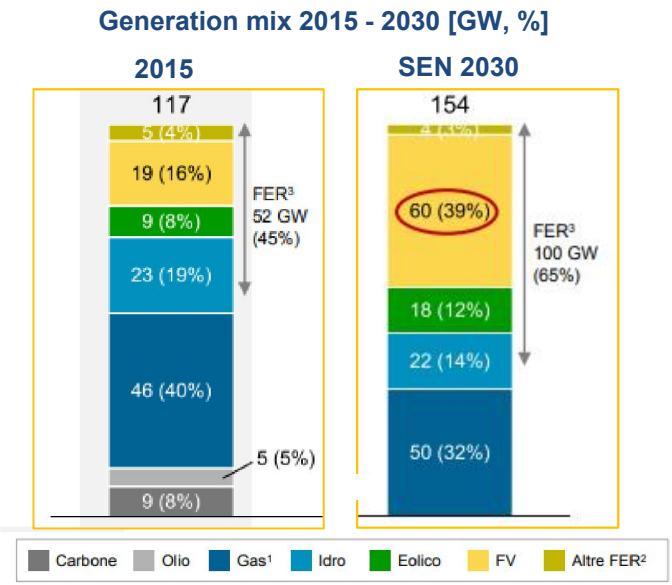
Strong challenges for the system



Source: TSO Development Plan 2018

According to SEN 2017, the power market will have to deal with:

- Power consumption increase in residential and transport uses
- Decentralized generation and «*prosumer*s» development
- New market sources required to mitigate RES:
  - New technologies (storage systems, DSM, smart meters, smart equipments in households etc.)
  - Market remedies (capacity market, ancillary services market opening)
  - New infrastructures to improve interconnections between National grids and develop DSO grids.

- **Power Purchase Agreement (PPA)** between RES producers/traders and consumers for green energy supply on a long term horizon
- For 2020-2021, still support to new RES through direct incentives (RES decree draft under evaluation)
- Demand/Supply aggregation, in order to mitigate price/volume risks
- Energy price curve on a long time horizon, offering a market reference index

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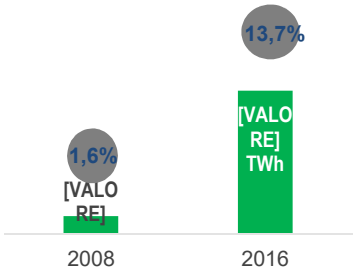
Security/adequacy challenges require new market remedies

In the last years, non-programmable RES growth and programmable thermo plants decrease led to relevant impacts on system costs/flexibility requirements. **Main stress factors:**

1

The progressive increase of non-programmable RES leads a consequent pressure on **grid costraints:** increase of congestion hours, until **25% of total hours of the year**, especially in North, Centre-North, and Centre-South market zones

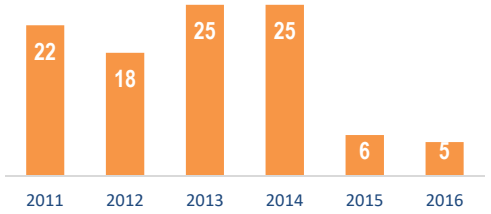
Energy Production PV & wind [TWh]



2

The progressive reduction of margin reserve, combined with exceptional demand peak, put the system under potential inadequacy risks in some market areas, especially in the main islands.

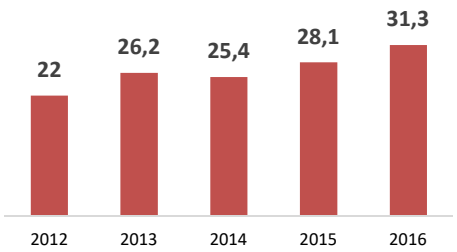
Reserve Margin at Peak [GW]



3

Strong **increase of imbalances and ancillary services markets demand**, in order to assure a sufficient warm reserve and voltage regulation.

Ancillary services volumes [TWh]



Source: Italian TSO

The parallel increase of RES / decrease of thermo is a real challenge for the system

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The role of hydro power plants: not to be underestimated

Hydro energy is still strategically relevant for the National system , as a RES *baseload* to achieve targets 2030 and 2050.
SEN 2017 target 2030: from 46 TWh to 50 TWh.

Some added values:

- ✓ Highest RES capacity installed
- ✓ High production rate
- ✓ Long life cycle
- ✓ Flexibility and security: programmable RES → active role in ancillary services markets

SEN 2017 underlined the necessity of new investments in order to avoid a rapid decline of the total installed capacity and loss of production, already depending on seasonality factors but also on regulatory uncertainties (public auctions for license obtainment still require a wide intervention: EU Commission infraction procedure ongoing)

Gross RES production (TWh):

Fonte	2015	2016	2017	Δ 17-16
Idraulica	45,5	42,4	36,1	-6,3
Eolica	14,8	17,7	17,7	0,0
Solare	22,9	22,1	24,4	2,3
Geotermica	6,2	6,3	6,2	-0,1
Bioenergie	19,4	19,5	19,3	-0,3
Totale FER-E	**108,9**	**108,0**	**103,7**	-4,4
CIL - Consumo Interno Lordo	327,9	325,0	330,3	5,3
FER/CIL (produzione effettiva)	**33,2%**	**33,2%**	**31,4%**	-1,9%
FER/CIL (produzione normalizzata)	***33,5%***	***34,0%***	***34,2%***	***0,2%***

Source: GSE report 2017

Sen 2017 also focused on hydro storage: it is still the easiest storage technology currently available

- ✓ Short time availability for primary reserve requirements
- ✓ High performances in down/up ramps
- ✓ Contribution to peak demand, assuring system adequacy

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Smart grids and energy communities

A new possible role for DSOs and final customers

- Active role of DSOs in ancillary services markets and grid regulation, as local counterpart, considering:

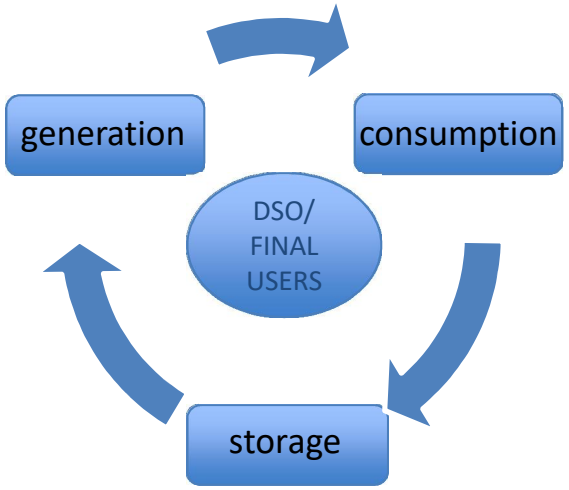
✓ Strong increase of distributed generation

✓ Demand side management and *prosumers*

✓ Power storage

✓ Digitalization

✓ Strong policy commitment to promote local energy communities



The consultation held by the Senate Industry Commission last October, **suggested many issues related to local energy communities promotion**: could local community disconnect from DSO grid? How to handle general charges? Who will handle security/adeqacy matters, if not DSOs? How to keep local consumers freedom to choose any supplier out of local community?

HOWEVER, in the near future will be required:

- New metering models, in order to offer right price/consumption signals to final customers
- More realiability, quality and security of distribution grids
- Active/reactive energy modulation on market basis, to reach local grid efficiency/security
- Active participation role of final customers/*prosumers* in energy/dispatching markets, through dynamic pricing, *real time* information and possibility to reduce energy expenses

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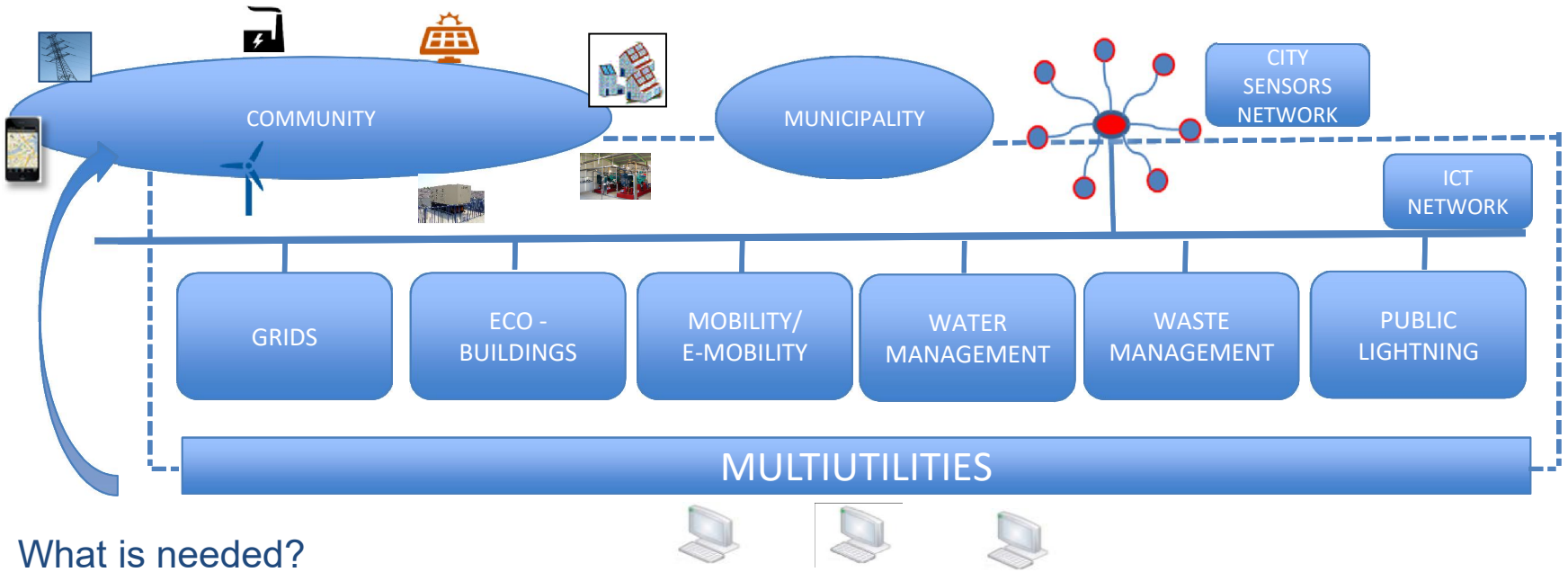
Smart cities: synergies could be led by local multiutilities



What is needed?

- **A new regulatory framework**, to define new rules for participation of local actors and relative supervision: responsibilities, duties and rights for all stakeholders involved
- **Additional infrastructures**: widespread and economically sustainable communication tools, to deal with new automation/control systems for local grids
- **New technologies**: the modulation of generation/consumption on local grid level requires flexibility and real time metering/remuneration

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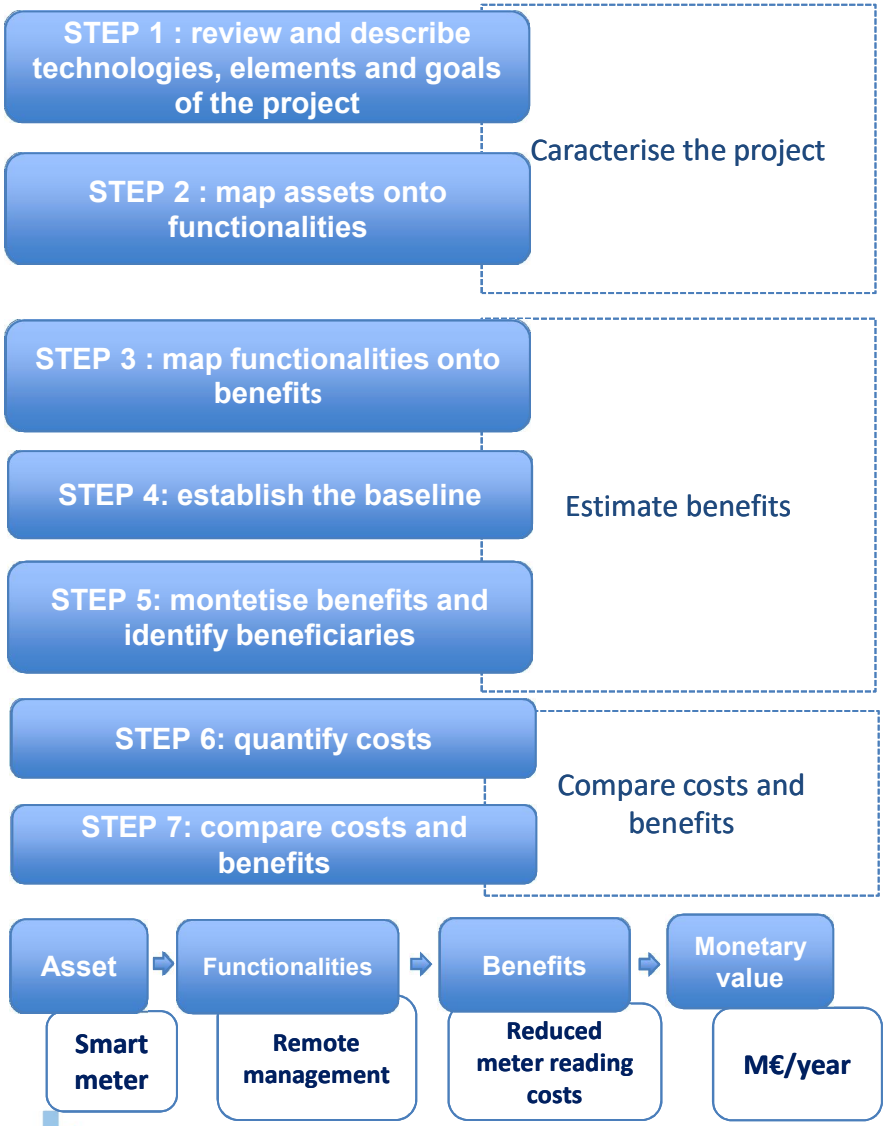
The role of regulation



Source: JRC Reference Report, EU Commission

- The role of regulation is crucial in ensuring that value for the customers is extracted from innovative investments (such as smart metering)
- Innovation creates new challenges: regulators have to identify the new border between regulated companies and the competitive market (for instance in the case of e-mobility)
- Integration of different innovations/sectors (smart grids, smart metering, e-mobility and storage) is essential, but probably the hardest challenge for regulators in the next future

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Some key messages

- The low carbon targets would be incomplete without a «downstream» approach based on smart cities as a main promoter of the innovation process
- Efficiency, sustainability, interoperability of different sustainable energy sources are key messages of the energy transition
- The reference model is not a progressive disconnection from the grids, but an improvement of DSOs/multiutilities operational capabilities, by adequate investments in innovative tools
- An update/enforcement of the remuneration scheme will be relevant for DSOs/multiutilities: output-based remunerations, premium/penalty systems, experimental pilot projects could be possibile solutions
- The role of regulation is basically important in supporting investments with a real added value
- The cooperation between policy makers and local associations will play a basic role in smart cities success

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Many thanks for the attention!

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